

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
MATERIALS CONTROL, SOILS AND TESTING DIVISION  
  
MATERIALS PROCEDURE

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PREPARING, RECORDING, AND TRANSMITTING APPROVED  
LIST OF WELDING ELECTRODES AND FLUXES

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- 1.0 PURPOSE
  - 1.1 To establish a system whereby manufacturers may prequalify their electrodes and fluxes for use on West Virginia Division of Highways projects.
  - 1.2 To establish a procedure for maintaining a record of such information.
  - 1.3 To establish a procedure for transmitting such information to the Districts and to Contractors on Division of Highways projects.
- 2.0 SCOPE
  - 2.1 Certified Test Reports
  - 2.2 Valid Age of Tests
  - 2.3 Automatic Data Processing Record Keeping
  - 2.4 Transmittal of Information
- 3.0 PROCEDURE
  - 3.1 Certified Test Reports

- 3.1.1 Manual Shielded Metal Arc Welding Consumables. The manufacturer shall furnish certified copies of test reports of all pertinent required tests of AWS A5.1, Mild Steel Covered Arc Welding Electrodes or AWS A5.5, Low Alloy Steel Covered Arc Welding Electrodes, whichever is applicable, of each class, size, and brand name of electrode he wishes to have included on approved list. For sizes of electrodes for which tests are not required by AWS A5.1 or AWS A5.5, the test report for electrodes of the size nearest to the size being offered and of the same classification shall be furnished. In this case, the manufacturer shall certify that the process and material requirements were the same for manufacturing the tested electrodes and the offered electrodes. The tests may have been for process qualification or Quality Control.
- 3.1.2 Submerged Arc Welding Consumables. The manufacturer shall furnish certified test reports for all electrodes and flux combinations offered. The test report shall include results of all pertinent required tests of AWS A5.17, Bare Carbon Steel Electrodes and Fluxes for Submerged Arc Welding or AWS A5.23, Bare Low Alloy Steel Electrodes and Fluxes for Submerged Arc Welding, whichever is applicable, for each classification or grade of flux-electrode combination. The tests shall have been made on electrodes of the same classification in combination with flux of the same brand and composition with flux of the same brand and combination and made with the same manufacturing procedure as the combination offered. The tests may have been for process qualification or Quality Control.
- 3.1.3 Gas Metal Arc and Flux Cored Arc Welding Consumables. The manufacturer shall furnish certified test reports for all electrodes and combination of shielding offered. The test reports shall include results of all pertinent required tests of AWS A5.18, Mild Steel Electrodes for Gas Metal Arc Welding or AWS A5.20, Mild Steel Electrodes for Flux Cored Arc Welding, whichever is applicable. The test shall have been made on electrodes of the same classification or grade, of the same brand, welded with same shielding gas and manufactured by same process and same materials as offered electrodes. The tests may have been for process qualification or Quality Control.

- 3.1.4 The Certified Test Report Form required in 3.1.1, 3.1.2, and 3.1.3 shall be similar to that shown in Attachment #1 containing all pertinent information concerning the tests required by the specification. The Certified Test Reports shall be submitted to West Virginia Division of Highways, Materials Control, Soils and Testing Division, 312 Michigan Avenue, Charleston, West Virginia, 25311.
- 3.2 Valid Age of Tests
  - 3.2.1 The tests submitted shall have been made within one (1) year prior to use of the type electrode proposed.
  - 3.2.2 The manufacturer may request the removal of any rod or flux from the approved list at any time. This request will be honored. When a revised list is issued, that product will be deleted from the approved list.
  - 3.2.3 The manufacturer may submit certifications of tests for products which he wishes to have added to the approved list, at any time.
- 3.3 Record Keeping - (Automatic Data Processing)
  - 3.3.1 Upon receipt of Certified Test Reports, these certifications shall be reviewed for applicable specification compliance. Products meeting the requirements of AWS Specification are approved and assigned a laboratory number for control purposes. Information as shown on test report is entered on ADP Input Sheet with the exception of date tested. The expiration date of a product is one year past the date tested plus two months. This two months extension is to cover testing time by manufacturer and the processing of test report. A product with test date of January 3, 1978, would have an expiration date of March 3, 1979.
  - 3.3.2 Information shown on the input sheets is transferred to ADP tape and said tape is processed by computer to result in the approved welding electrode list.

- 3.3.3 The computer automatically deletes any product that has an expiration data previous to the date of the Approved List.
- 3.4 Transmittal of Information
- 3.4.1 As soon as the approved list is processed, a copy shall be sent to all District Materials Engineers or Materials Supervisors, Inspection Consultants for Division of Highways, Bridge Fabricating Shops, and Manufacturers submitting test reports.
- 3.4.2 It is the responsibility of the District Materials Engineer to notify Contractors of the current list.
- 3.4.3 This approved list of welding electrodes and fluxes shall be available to all Contractors on Division of Highways projects by request to the District Materials Engineer or Materials Supervisor or by letter request to Materials Control, Soils and Testing Division.
- 3.4.4 It is the responsibility of our Inspection Consultants to notify fabricating shop presently active in bridge fabrication of the current list.
- 3.4.5 The Project Engineer shall keep a record in the project diary of all welding consumables used at the project site, listing brand name and type of welding on which used.

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Gary L. Robson, Director  
Materials Control, Soils  
and Testing Division

GLR:c

Attachments

MP 615.00.20  
REPLACES IM-29  
ORIGINAL ISSUANCE: DEC. 1967  
1ST REVISION: DECEMBER 1978  
REISSUED: JANUARY 1995  
ATTACHMENT 1  
PAGE 1 OF 2

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SEE PAGE 2 OF ATTACHMENT

FOR FORM

(Manufacturer's Name)

and Address)

**CERTIFICATE OF CONFORMANCE TO REQUIREMENTS  
FOR WELDING ELECTRODES**

Supplied to: \_\_\_\_\_ Date: \_\_\_\_\_

This is to certify that (Trade name or No.) AWS Classification (EXXXX), as supplied under the above order number, is of the same classification, manufacturing process, and material requirements, as electrodes tested on \_\_\_\_\_ 19\_\_.

All tests required by Specification AWS A5.1 or AWS A5.5, were performed in conformance with the specification, and the above electrode met all the requirements. The electrodes are marked in conformance with AWS A5.1 or AWS A5.5.

The chemistry and mechanical properties of the deposited weld metal were as follows:

<u>4</u>	<u>5</u>	<u>6</u>
DC+ AC	DC + AC	DC + AC

Tensile Strength Mpa \_\_\_\_\_

Yield Strength Mpa \_\_\_\_\_

Elongation % in 50 mm \_\_\_\_\_

Charpy V Notch

Meters Kg at \_\_\_\_\_ C. \_\_\_\_\_

Manganese % \_\_\_\_\_

Silicon % \_\_\_\_\_

Nickel % \_\_\_\_\_

Chromium % \_\_\_\_\_

Molybdenum % \_\_\_\_\_

Vanadium % \_\_\_\_\_

Fillet Tests - Position

as Required \_\_\_\_\_

Radiographic Test \_\_\_\_\_

Operations Supervised by: \_\_\_\_\_ Chief Engineer \_\_\_\_\_ Director \_\_\_\_\_

Fillet Test, Radiographic, chemistry and mechanical properties are not required for the following size: